



**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,

Site Manager  
Descon Engineering Limited.  
Construction of Mohmand Dam Hydropower Project - Contract No. ICB MDHP-01,  
Construction of Civil Works Including Design, Supply and Installation of Electrical and  
Mechanical Works and Hydraulic Steel Structures.

Reference # CED/TFL **5730** (Dr. M Kashif)

Dated: 27-09-2024

Reference of the request letter # MDHP-DEL-LABT-206

Dated: 23-09-2024

**Tension Test Report** (Page – 1/18)

Date of Test 04-10-2024

Gauge length 640 mm

Description Steel Strand Tensile Test as per ASTM A-416-94a

| Sr. No. | Nominal Diameter | Nominal Weight | Measured weight | Yield strength clause (6.3) |        | Breaking strength clause (6.2) |        | Young's Modulus of Elasticity | % Elongation | Remarks / Coil No.   |
|---------|------------------|----------------|-----------------|-----------------------------|--------|--------------------------------|--------|-------------------------------|--------------|----------------------|
|         | (mm)             | (kg/km)        | (kg/km)         | (kg)                        | (kN)   | (kg)                           | (kN)   | E, GPa                        |              |                      |
| 1       | 15.24 (0.6")     | 1102.0         | 1136.0          | 25000                       | 245.25 | 27900                          | 273.70 | 199                           | >3.50        | 24108706-13348       |
| 2       | 15.24 (0.6")     | 1102.0         | 1124.0          | 24900                       | 244.27 | 27000                          | 264.87 | 199                           | >3.50        |                      |
| 3       | 15.24 (0.6")     | 1102.0         | 1127.0          | 25300                       | 248.19 | 27200                          | 266.83 | 198                           | >3.50        | 24108708-13398       |
| 4       | 15.24 (0.6")     | 1102.0         | 1130.0          | 25200                       | 247.21 | 27600                          | 270.76 | 199                           | >3.50        |                      |
| 5       | 15.24 (0.6")     | 1102.0         | 1123.0          | 25100                       | 246.23 | 27600                          | 270.76 | 199                           | >3.50        | 24308709-13402       |
| 6       | 15.24 (0.6")     | 1102.0         | 1123.0          | 25200                       | 247.21 | 27600                          | 270.76 | 199                           | >3.50        |                      |
| 7       | 15.24 (0.6")     | 1102.0         | 1128.0          | 25400                       | 249.17 | 27800                          | 272.72 | 198                           | >3.50        | K4500043<br>58-41095 |
| 8       | 15.24 (0.6")     | 1102.0         | 1125.0          | 25400                       | 249.17 | 27600                          | 270.76 | 199                           | >3.50        |                      |

**Only eight samples for Test**

Note:

1. Modulus of Elasticity is based on nominal steel area of the steel strand vide clause 13.3 of ASTM – A416a
2. Load versus percentage strain graphs are attached

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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Dated: 23-09-2024

**Tension Test Report** (Page – 2/18)

Date of Test 04-10-2024

Gauge length 640 mm

Description Steel Strand Tensile Test as per ASTM A-416-94a

| Sr. No. | Nominal Diameter | Nominal Weight | Measured weight | Yield strength clause (6.3) |        | Breaking strength clause (6.2) |        | Young's Modulus of Elasticity | % Elongation | Remarks / Coil No. |
|---------|------------------|----------------|-----------------|-----------------------------|--------|--------------------------------|--------|-------------------------------|--------------|--------------------|
|         | (mm)             | (kg/km)        | (kg/km)         | (kg)                        | (kN)   | (kg)                           | (kN)   | E, GPa                        |              |                    |
| 1       | 15.24 (0.6")     | 1102.0         | 1135.0          | 25300                       | 248.19 | 28000                          | 274.68 | 199                           | >3.50        | K450004359-40893   |
| 2       | 15.24 (0.6")     | 1102.0         | 1134.0          | 25100                       | 246.23 | 28100                          | 275.66 | 198                           | >3.50        |                    |
| 3       | 15.24 (0.6")     | 1102.0         | 1134.0          | 24800                       | 243.29 | 28000                          | 274.68 | 199                           | >3.50        | J450004507-41011   |
| 4       | 15.24 (0.6")     | 1102.0         | 1135.0          | 25000                       | 245.25 | 28000                          | 274.68 | 199                           | >3.50        |                    |
| 5       | 15.24 (0.6")     | 1102.0         | 1136.0          | 24100                       | 236.42 | 27600                          | 270.76 | 198                           | >3.50        | J431006729-41026   |
| 6       | 15.24 (0.6")     | 1102.0         | 1135.0          | 24500                       | 240.35 | 27600                          | 270.76 | 199                           | >3.50        |                    |
| 7       | 15.24 (0.6")     | 1102.0         | 1119.0          | 24200                       | 237.40 | 27500                          | 269.78 | 199                           | >3.50        | J450004511-41014   |
| 8       | 15.24 (0.6")     | 1102.0         | 1119.0          | 24200                       | 237.40 | 27100                          | 265.85 | 199                           | >3.50        |                    |

**Only eight samples for Test**

Note:

1. Modulus of Elasticity is based on nominal steel area of the steel strand vide clause 13.3 of ASTM – A416a
2. Load versus percentage strain graphs are attached

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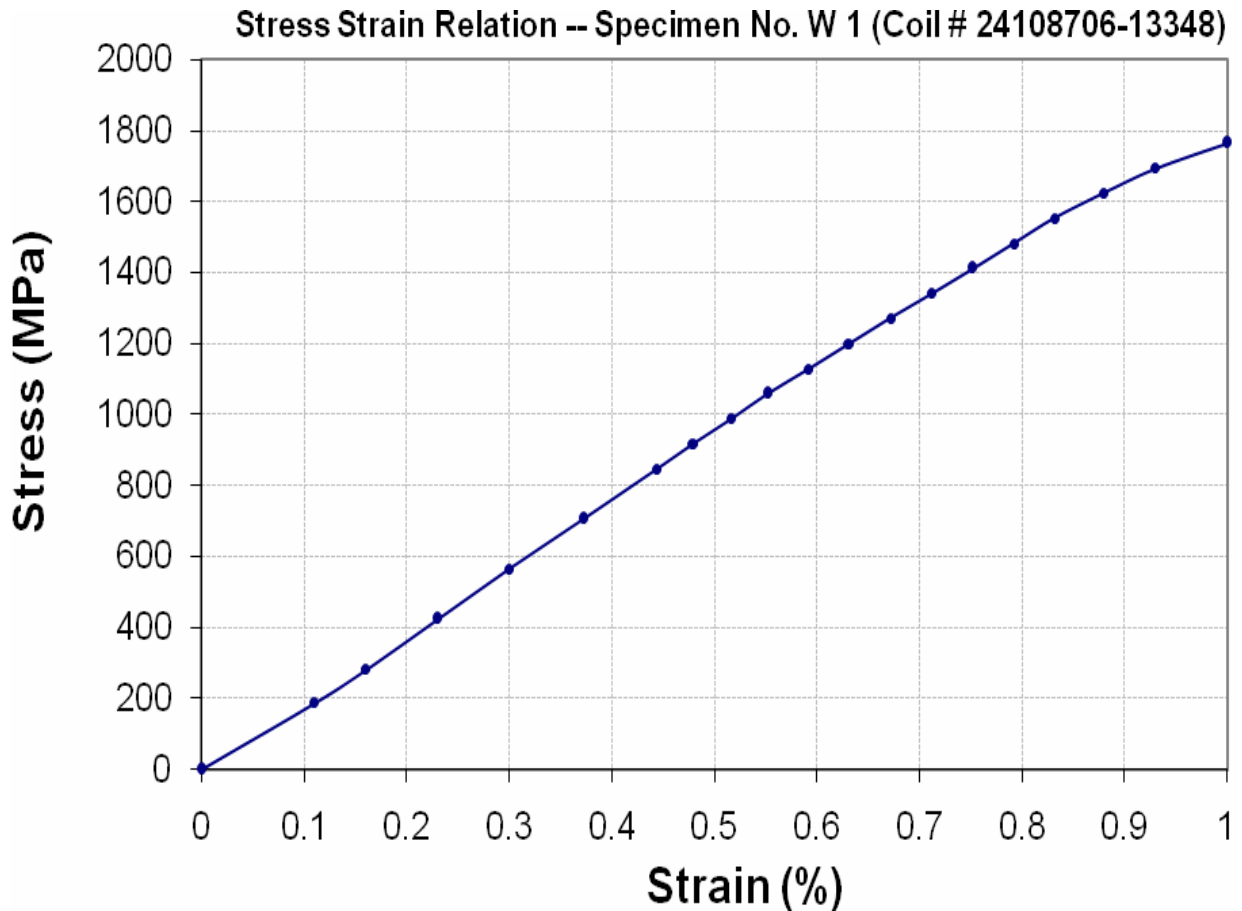
Reference # CED/TFL **5730** (Dr. M Kashif)

Dated: 27-09-2024

Reference of the request letter # MDHP-DEL-LABT-206

Dated: 23-09-2024

**Graph** (Page – 3/18)



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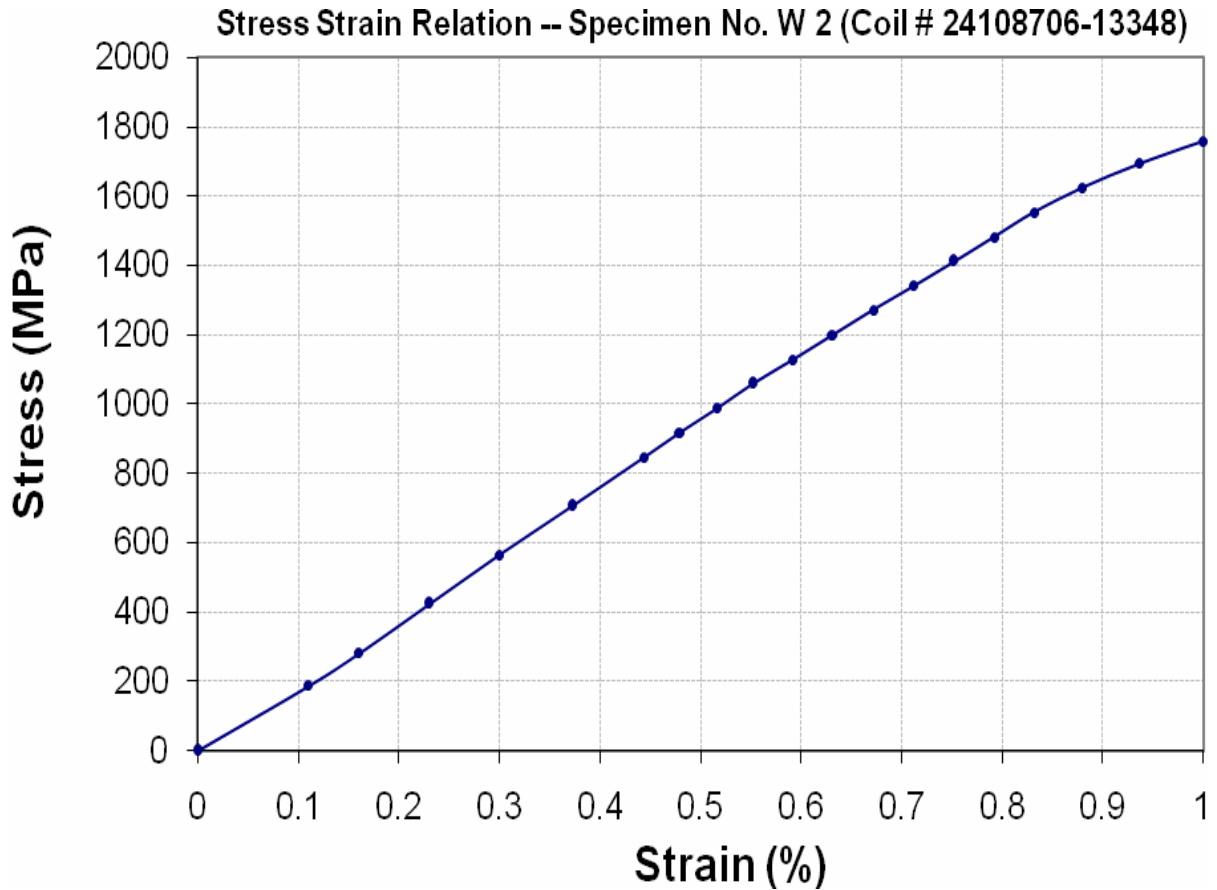
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**Graph** (Page – 4/18)



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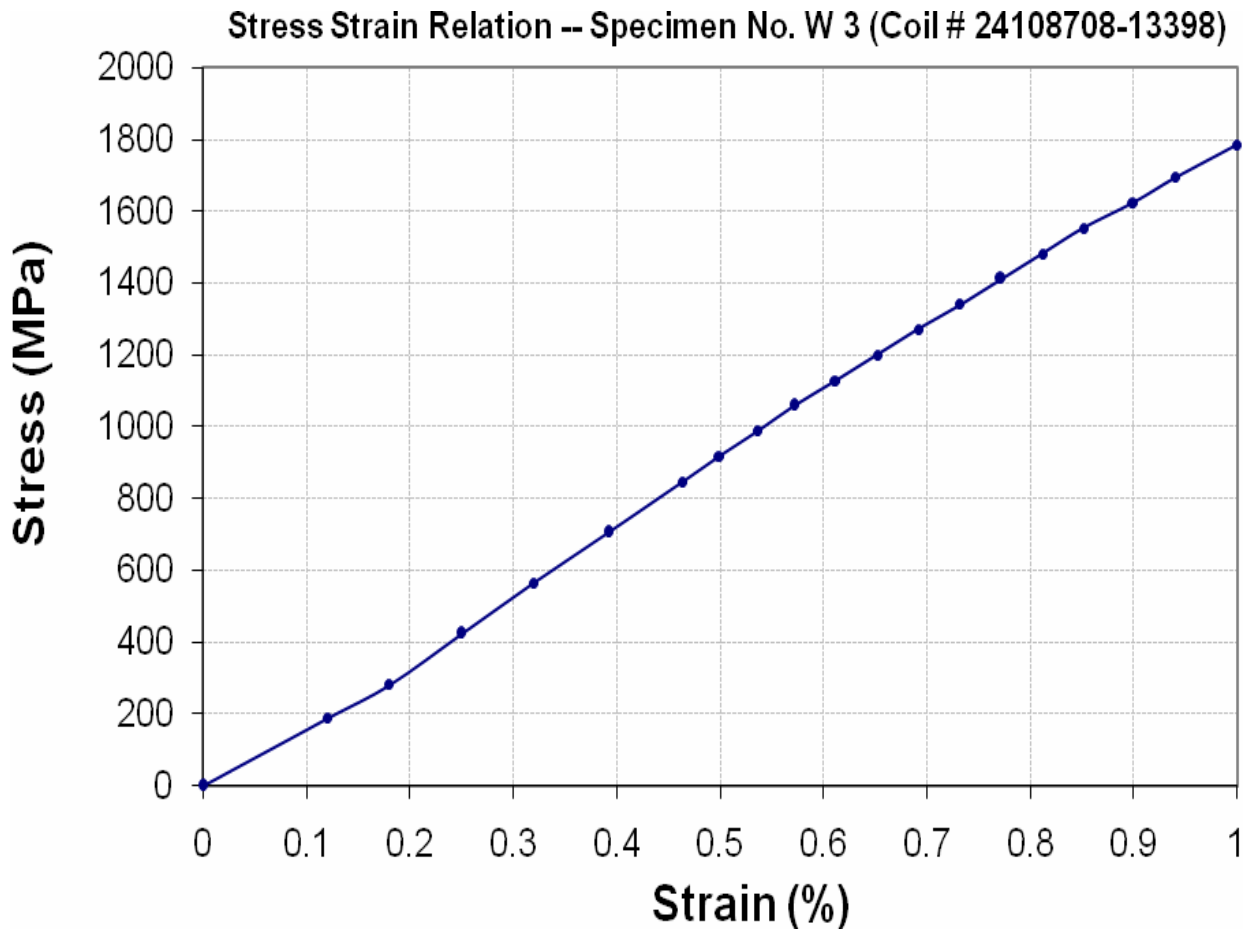
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**Graph** (Page – 5/18)



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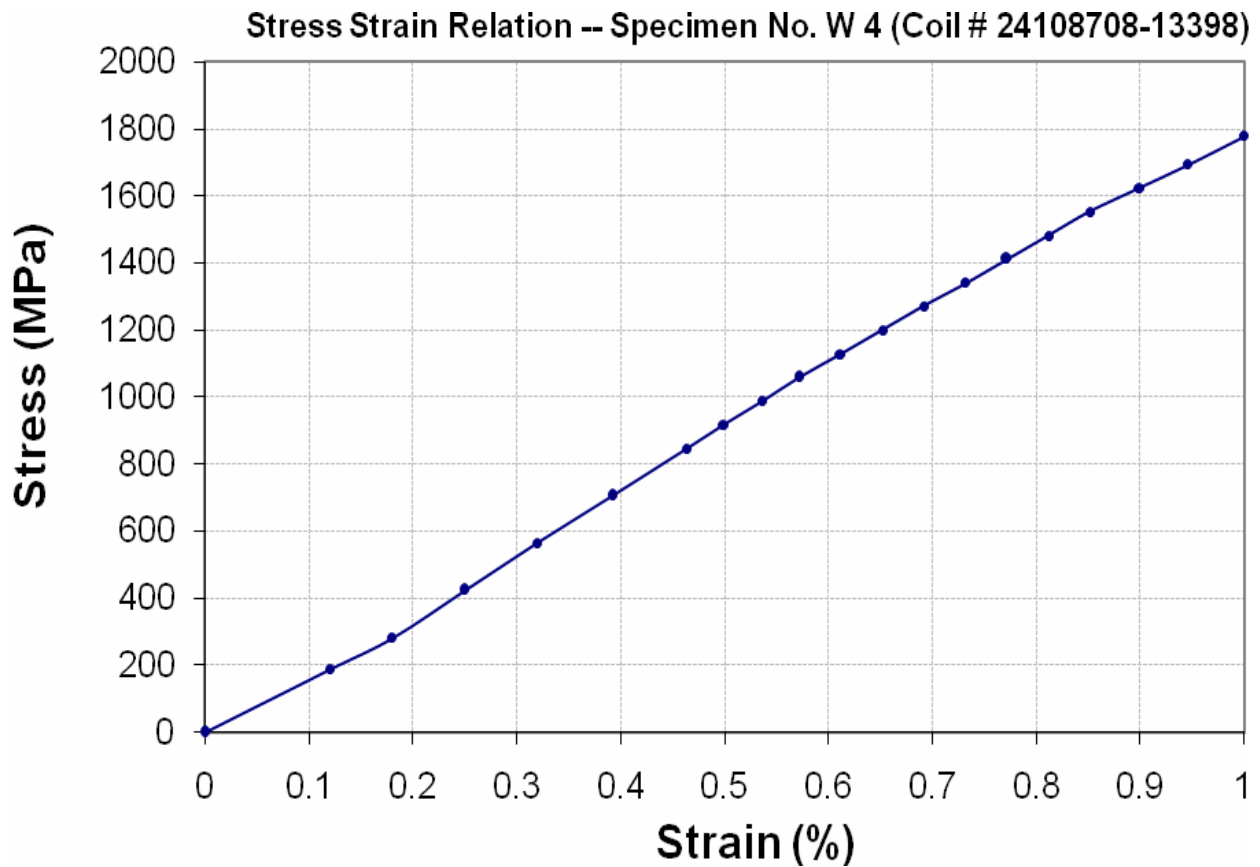
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**Graph** (Page -6/18)



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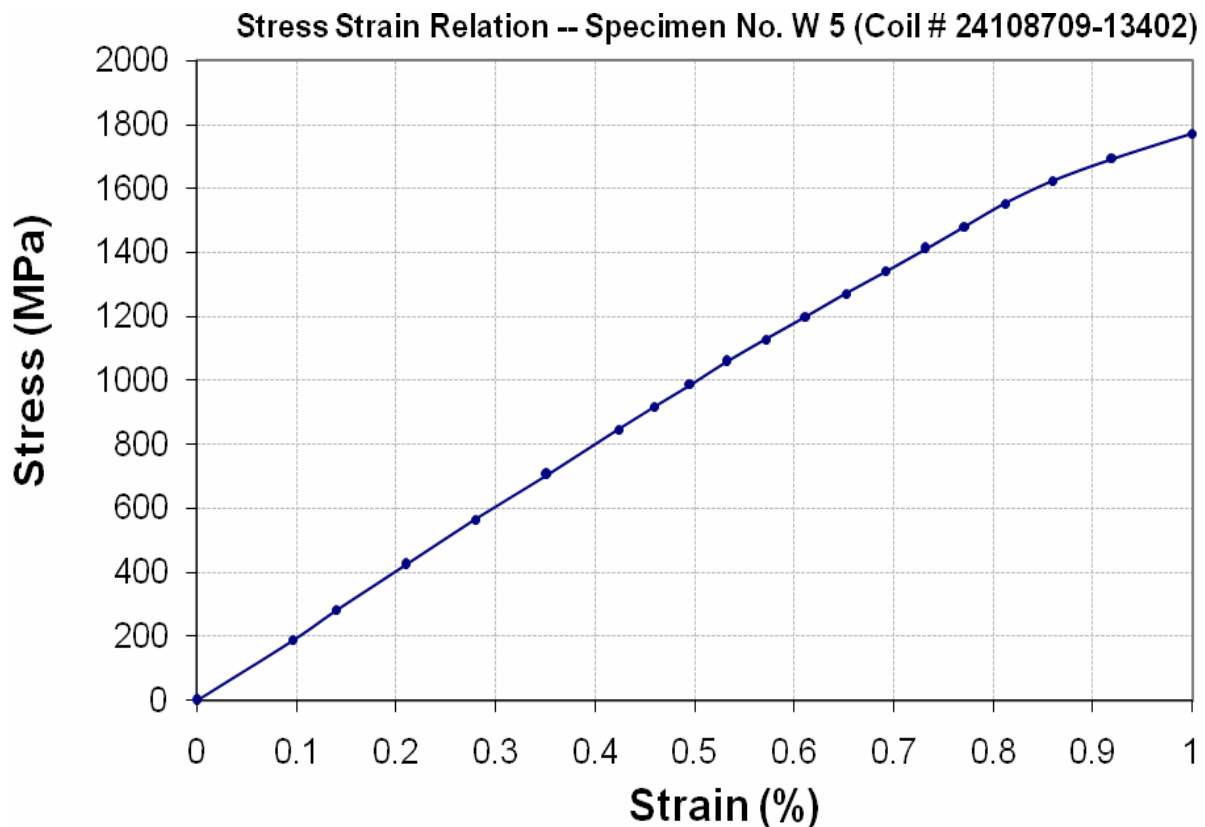
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**Graph** (Page – 17/18)



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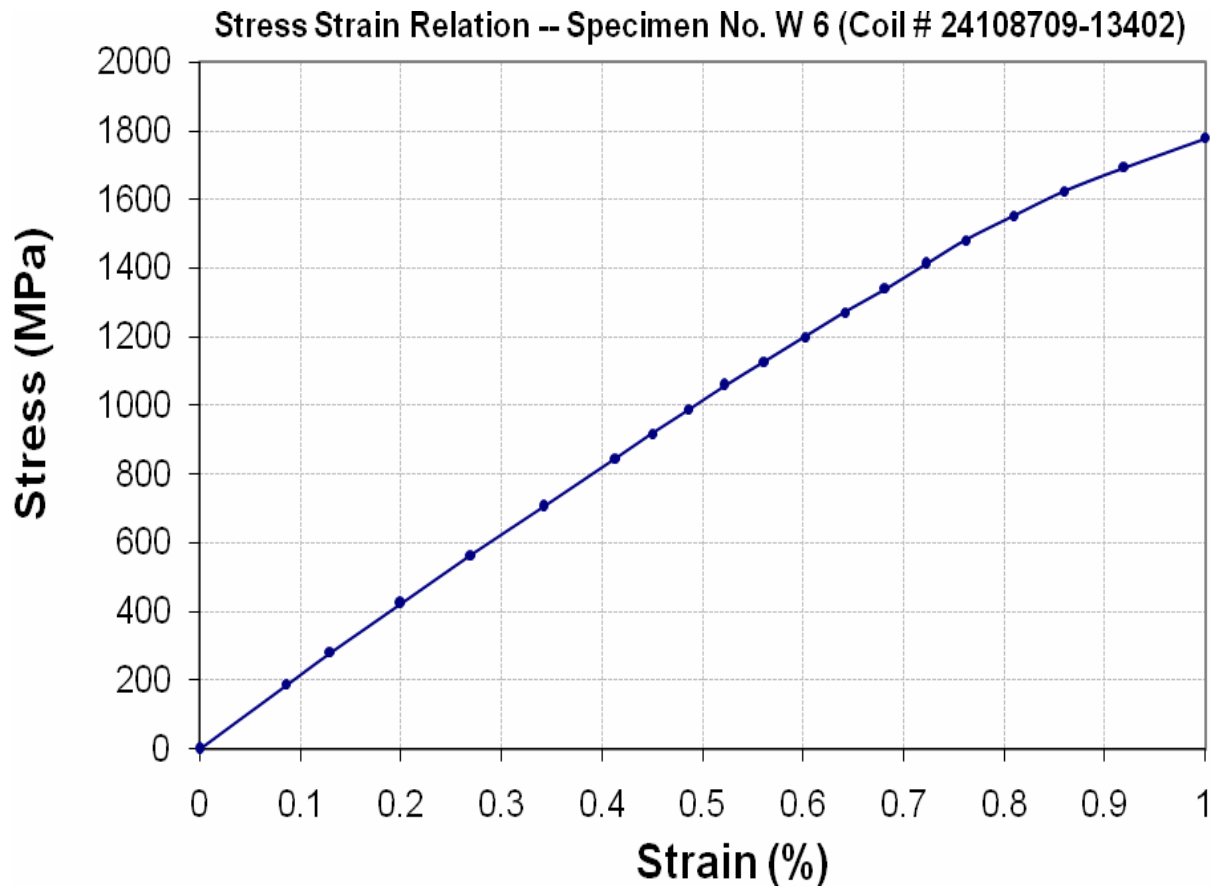
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**Graph** (Page – 8/18)



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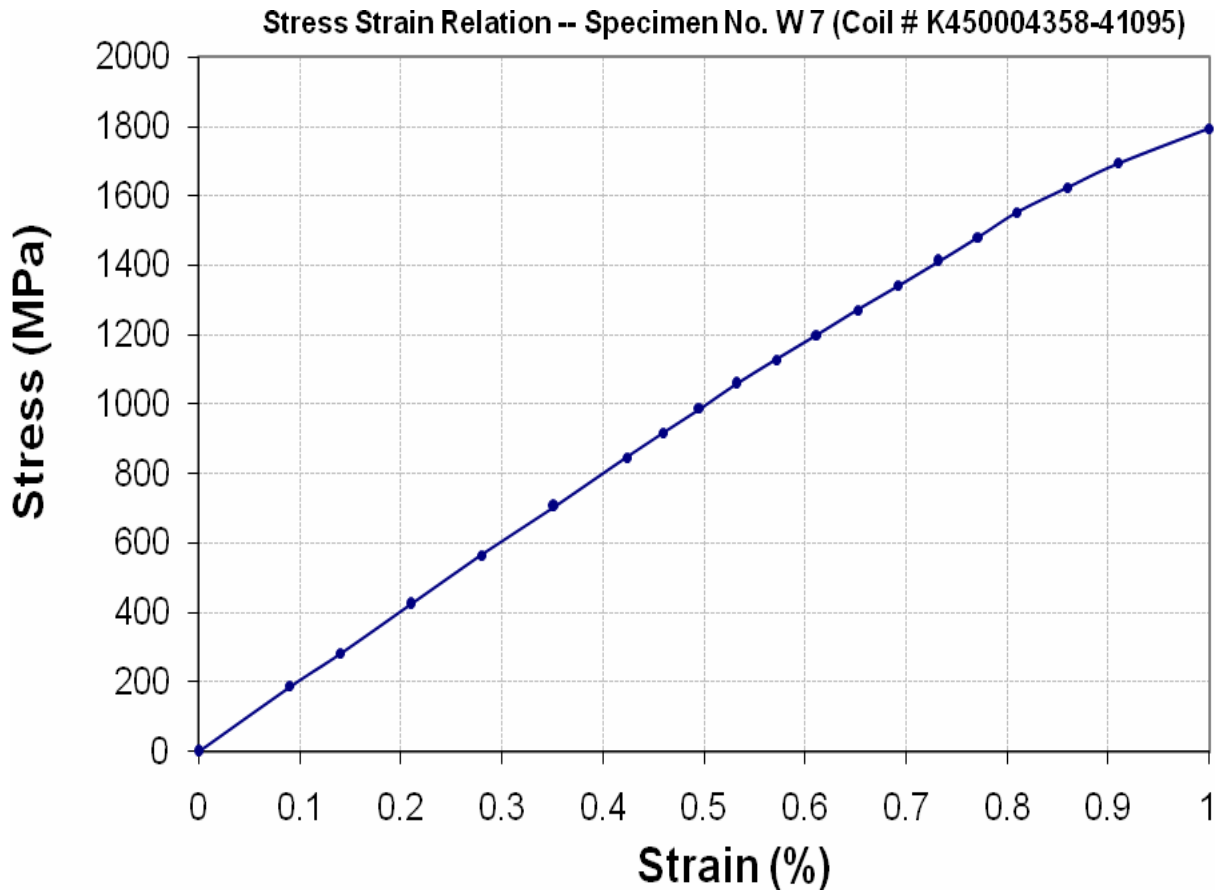
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**Graph** (Page – 9/18)



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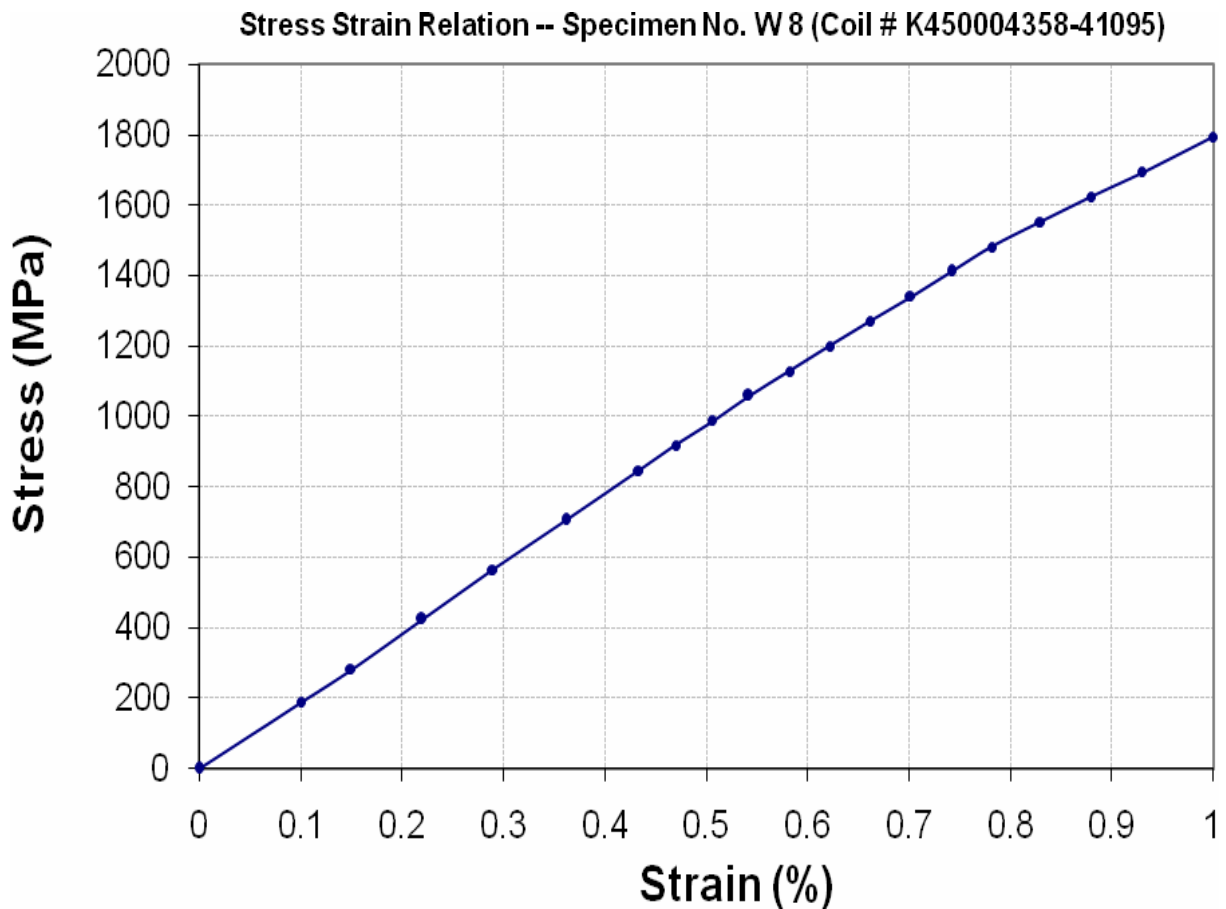
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**Graph** (Page – 10/18)



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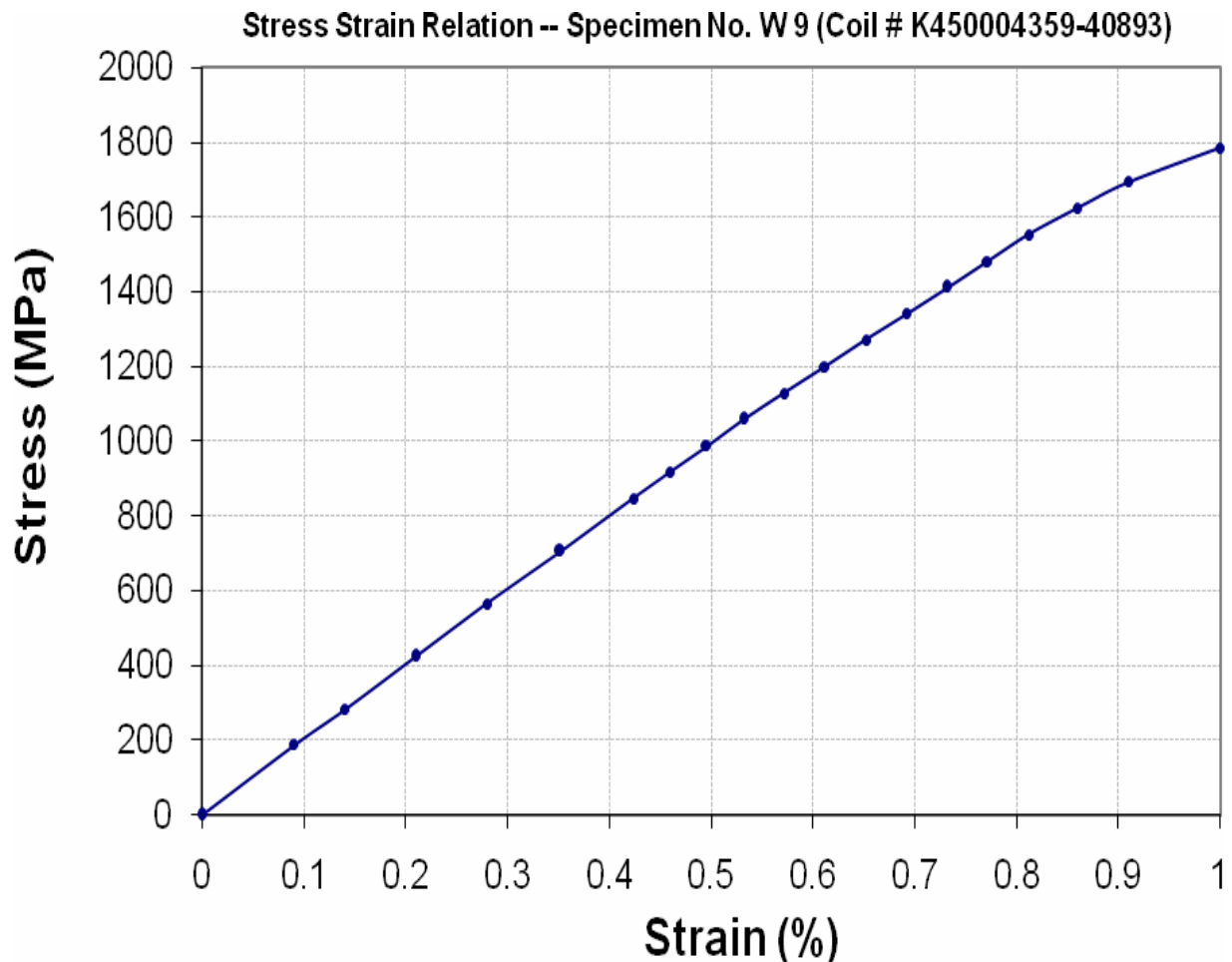
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**Graph** (Page – 11/18)



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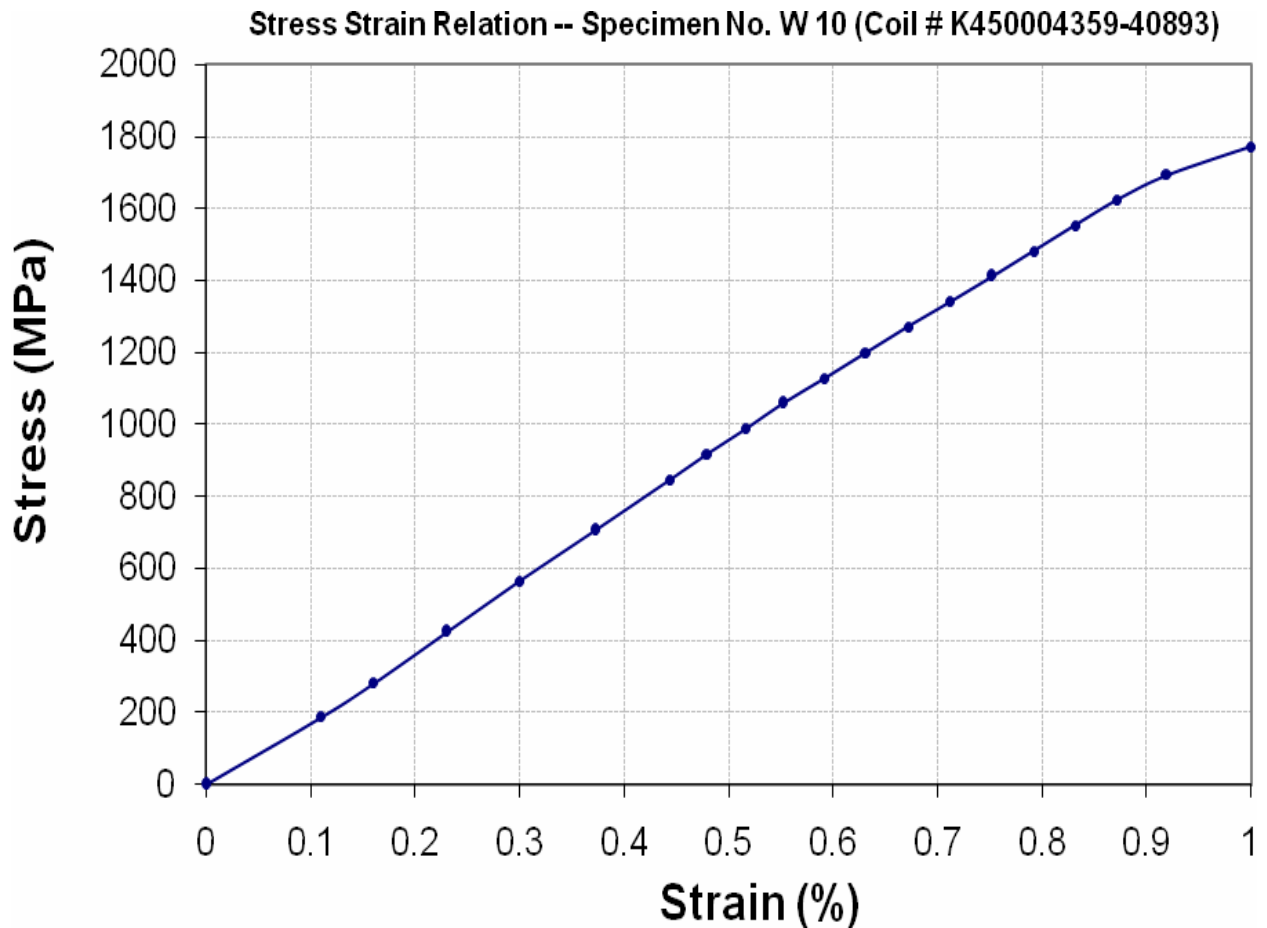
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**Graph** (Page – 12/18)



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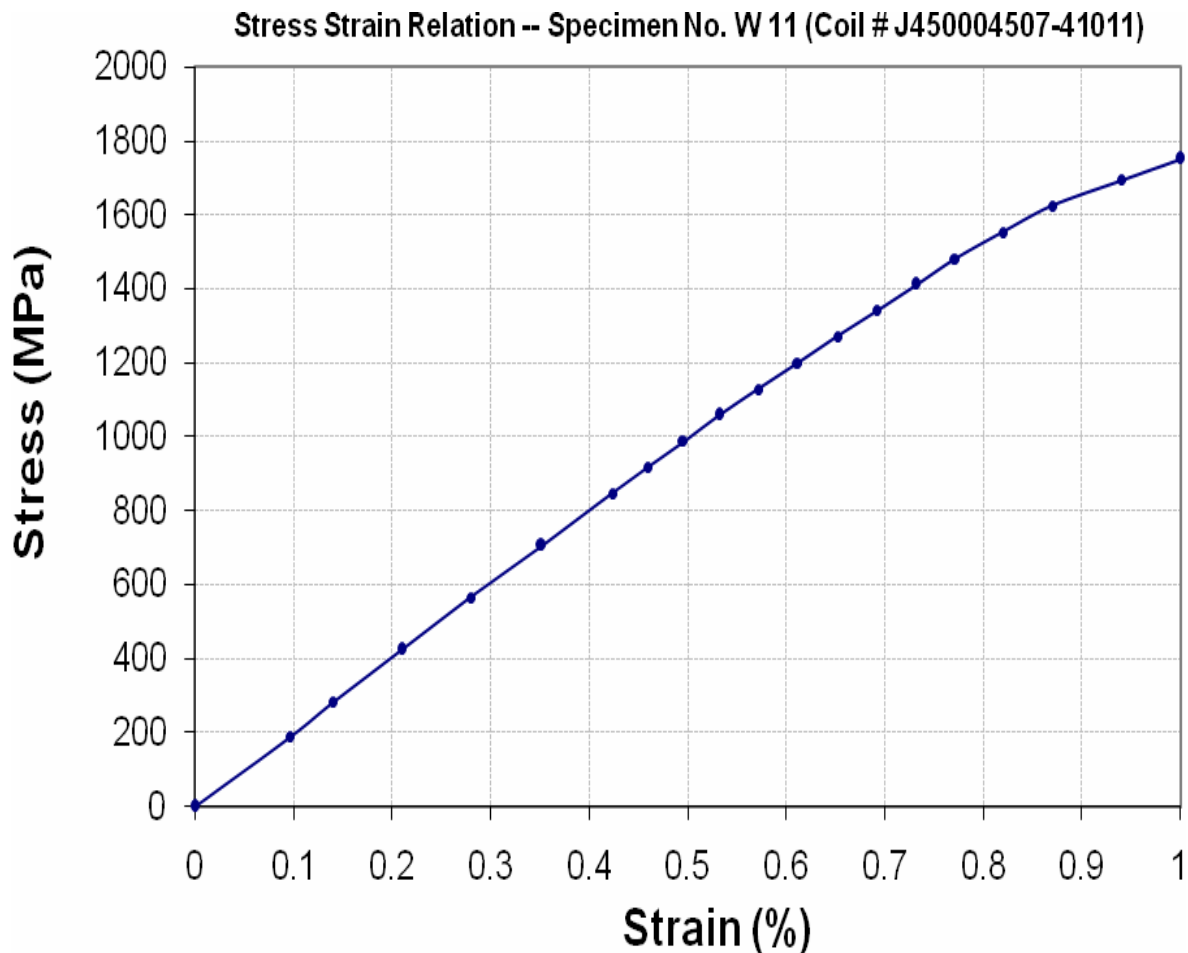
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**Graph** (Page – 13/18)



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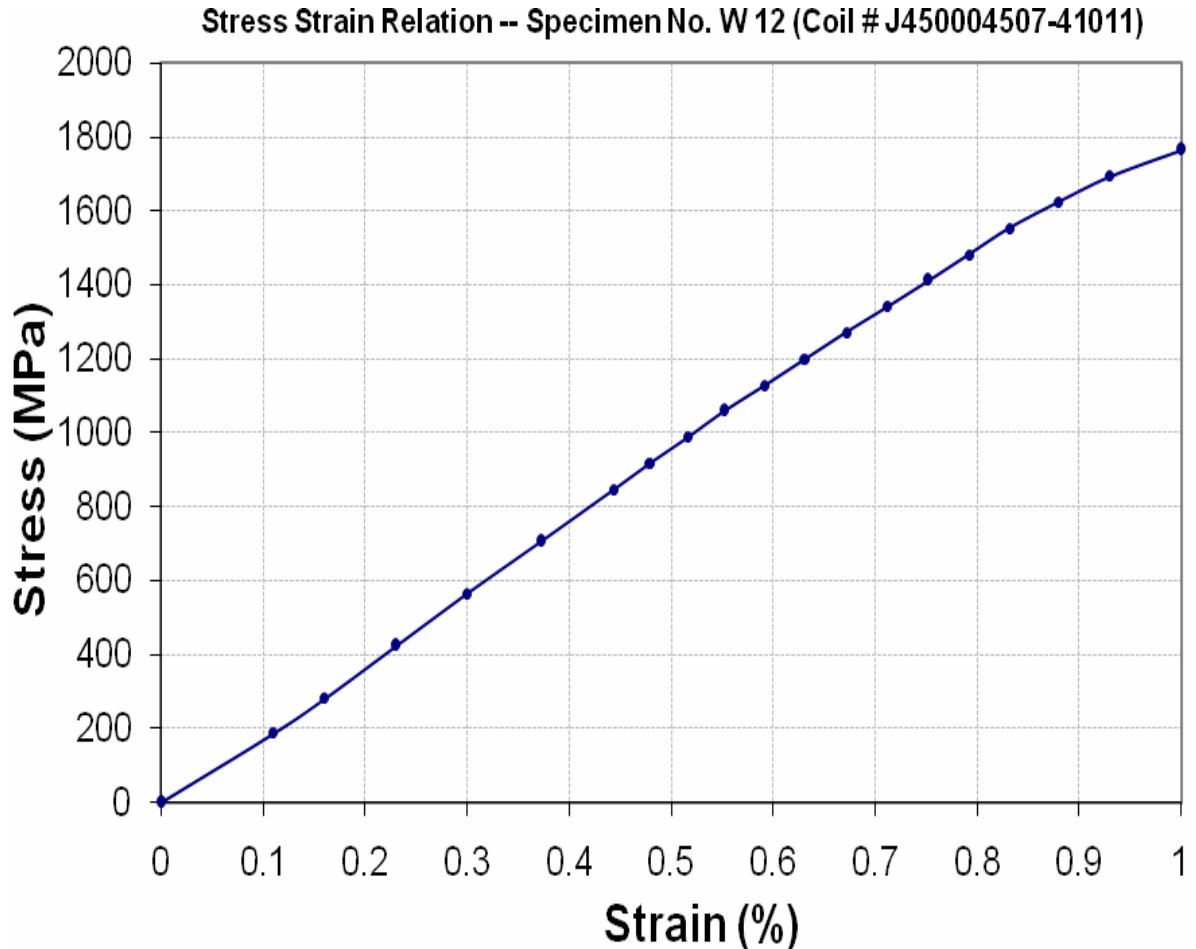
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**Graph** (Page – 14/18)



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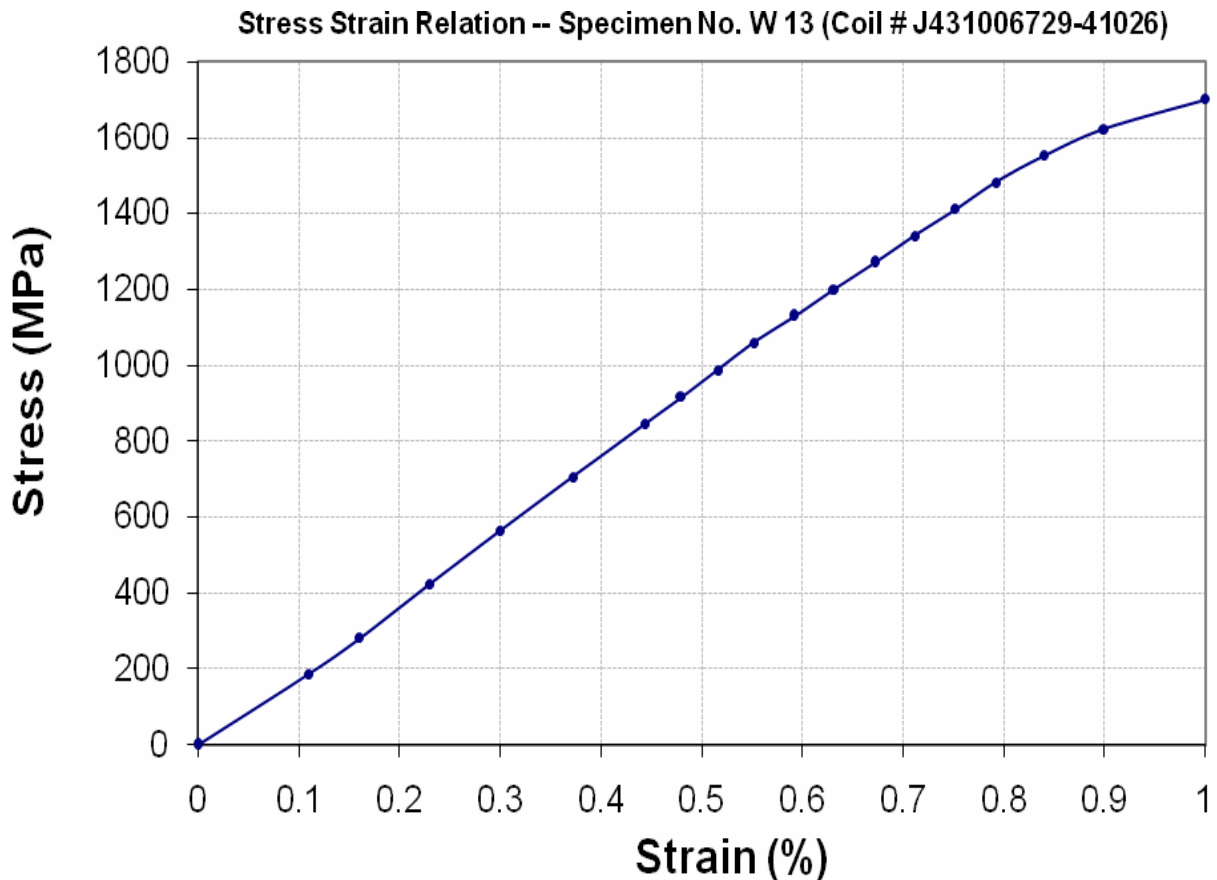
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**Graph** (Page – 15/18)



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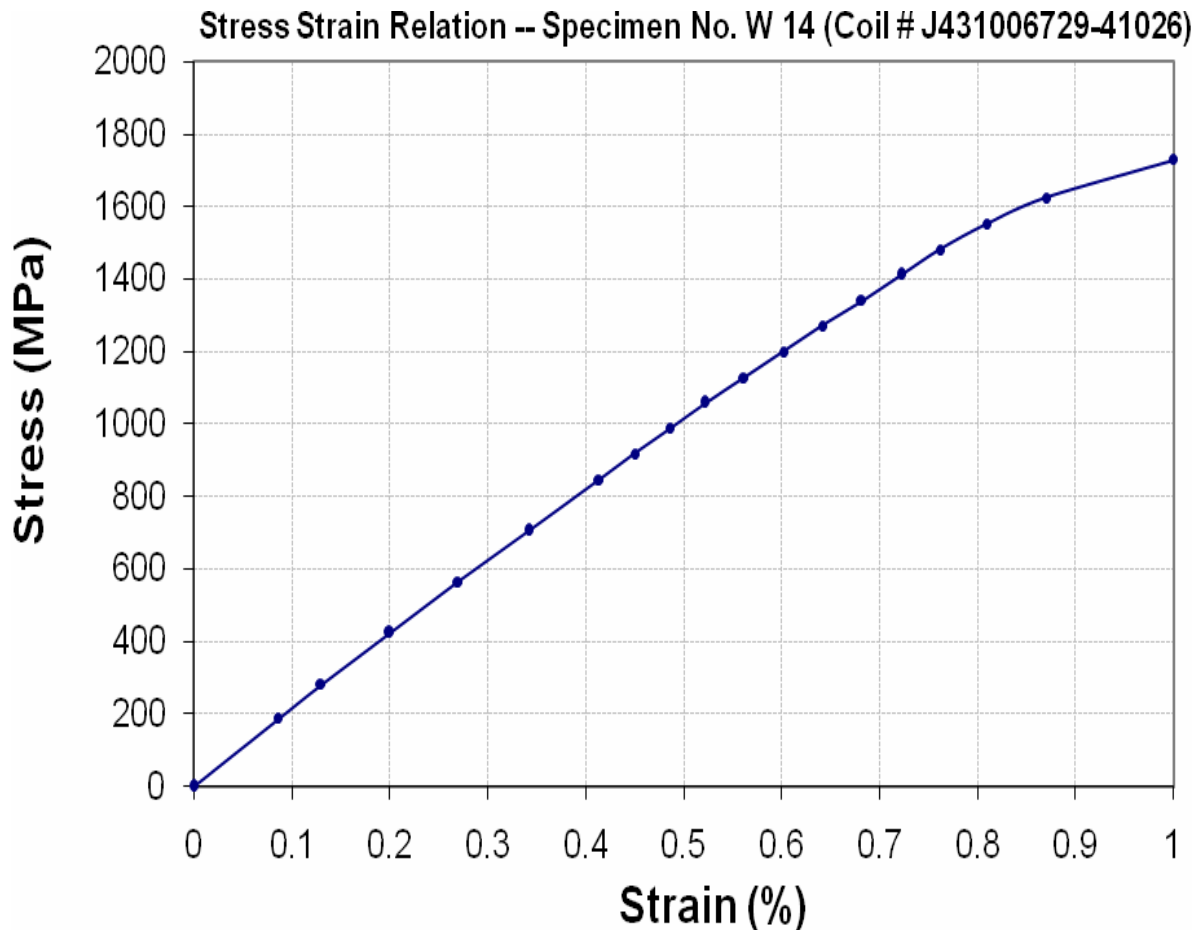
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Dated: 23-09-2024

**Graph** (Page – 16/18)



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,

Site Manager  
Descon Engineering Limited.  
Construction of Mohmand Dam Hydropower Project - Contract No. ICB MDHP-01,  
Construction of Civil Works Including Design, Supply and Installation of Electrical and  
Mechanical Works and Hydraulic Steel Structures.

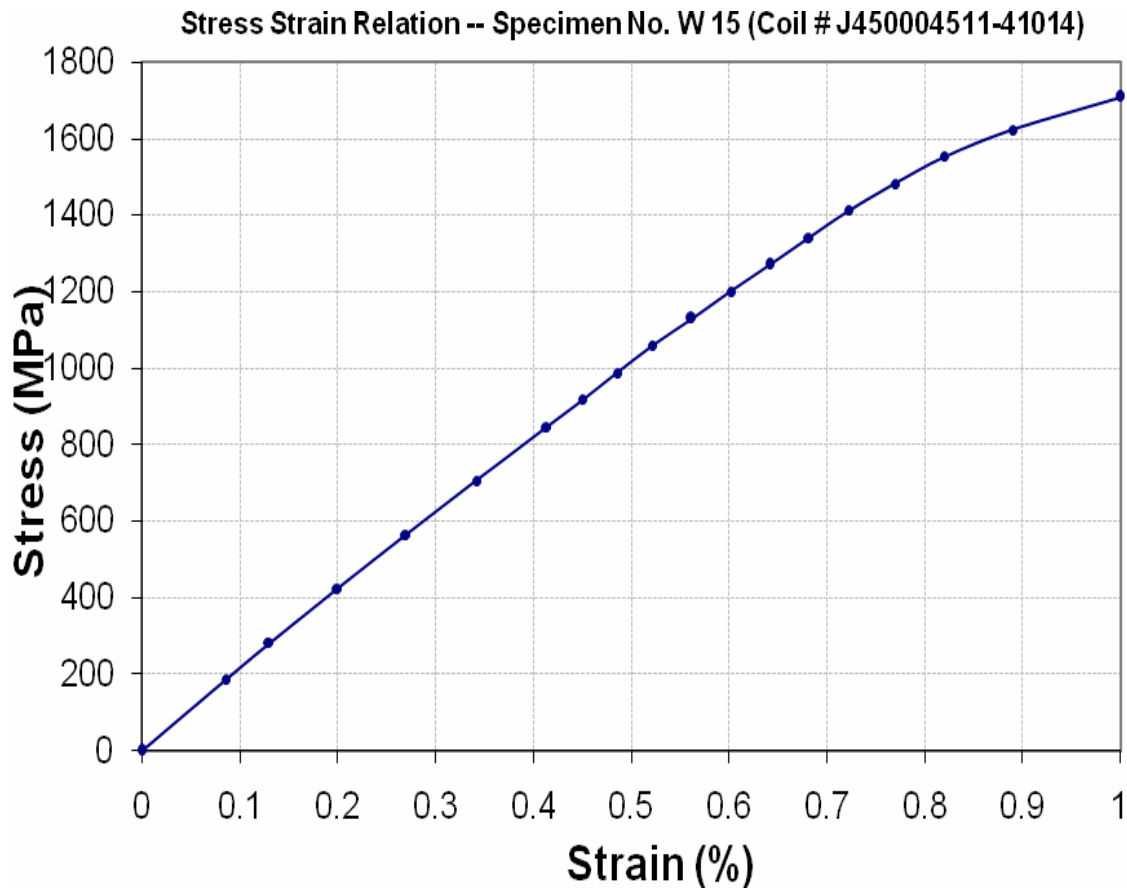
Reference # CED/TFL **5730** (Dr. M Kashif)

Dated: 27-09-2024

Reference of the request letter # MDHP-DEL-LABT-206

Dated: 23-09-2024

**Graph** (Page – 17/18)



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

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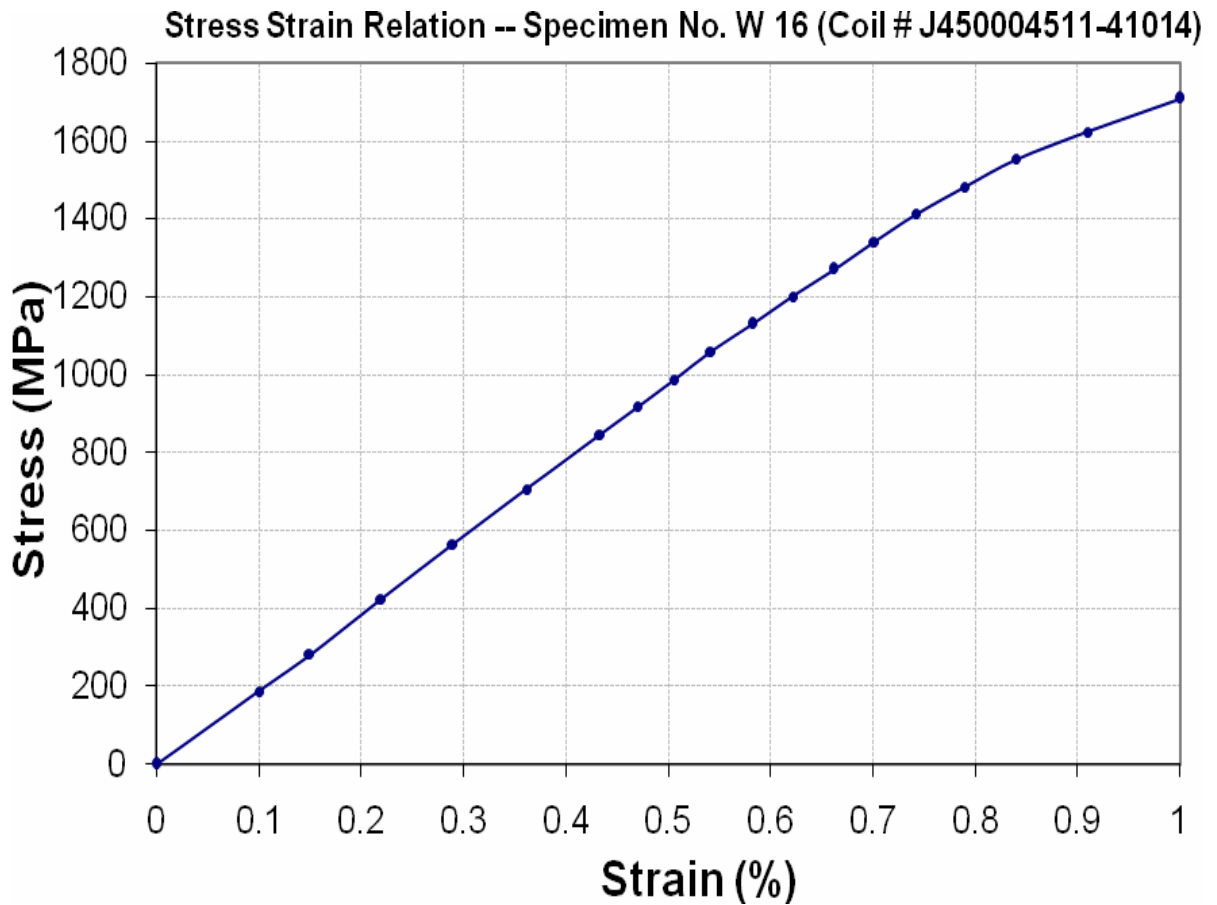
Reference # CED/TFL **5730** (Dr. M Kashif)

Dated: 27-09-2024

Reference of the request letter # MDHP-DEL-LABT-206

Dated: 23-09-2024

**Graph** (Page – 18/18)



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,  
Sr. Engineer, Civil,  
Pakistan Atomic Energy Commission  
Dera Ghazi Khan

Reference # CED/TFL **5770** (Dr. M Kashif)  
Reference of the request letter # Nil

Dated: 03-10-2024  
Dated: 02-10-2024

**Tension Test Report** (Page -1/1)

Date of Test 04-10-2024  
Gauge length 8 inches  
Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

| Sr. No.  | Weight<br>(lbs/ft) | Diameter/<br>Size |                  | Area<br>(in <sup>2</sup> ) |        | Yield load<br>(kg) | Breaking<br>Load<br>(kg) | Yield Stress<br>(psi) |        | Ultimate Stress<br>(psi) |        | Elongation<br>(inch) | % Elongation | Remarks |
|--|--------------------|-------------------|------------------|----------------------------|--------|--------------------|--------------------------|-----------------------|--------|--------------------------|--------|----------------------|--------------|---------|
|  |                    | Nominal<br>(#)    | Actual<br>(inch) | Nominal                    | Actual |                    |                          | Nominal               | Actual | Nominal                  | Actual |                      |              |         |
| 1  | 0.369              | 3                 | 0.372            | 0.11                       | 0.109  | 3700               | 4900                     | 74200                 | 75140  | 98200                    | 99500  | 1.40                 | 17.5         |         |
| 2  | 0.369              | 3                 | 0.371            | 0.11                       | 0.108  | 3700               | 4900                     | 74200                 | 75250  | 98200                    | 99700  | 1.40                 | 17.5         |         |
| -  | -                  | -                 | -                | -                          | -      | -                  | -                        | -                     | -      | -                        | -      | -                    | -            |         |
| -  | -                  | -                 | -                | -                          | -      | -                  | -                        | -                     | -      | -                        | -      | -                    | -            |         |
| -  | -                  | -                 | -                | -                          | -      | -                  | -                        | -                     | -      | -                        | -      | -                    | -            |         |
| -  | -                  | -                 | -                | -                          | -      | -                  | -                        | -                     | -      | -                        | -      | -                    | -            |         |
| <b>Note: only two samples for tensile and one sample for bend test</b> |                    |                   |                  |                            |        |                    |                          |                       |        |                          |        |                      |              |         |
| Bend Test  |                    |                   |                  |                            |        |                    |                          |                       |        |                          |        |                      |              |         |
| #3 Bar Bend Test Through 180° is Satisfactory                          |                    |                   |                  |                            |        |                    |                          |                       |        |                          |        |                      |              |         |
|  |                    |                   |                  |                            |        |                    |                          |                       |        |                          |        |                      |              |         |
|  |                    |                   |                  |                            |        |                    |                          |                       |        |                          |        |                      |              |         |

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,

Executive Project Manager  
China Civil Engineering Construction Corporation  
Pakistan Branch Office  
Dasu KKH-01  
(Wire and Cable Products.)

Reference # CED/TFL **5771** (Dr. M Kashif)

Dated: 03-10-2024

Reference of the request letter # CCECC/PAK/DASUFIELD/KKH-01/24-187 Dated: 28-09-2024

**Tension Test Report** (Page – 1/2)

Date of Test 04-10-2024

Gauge length 600 mm

Description Steel Strand Tensile Test as per ASTM A-416-94a

| Sr. No.                         | Nominal Diameter | Nominal Weight | Measured weight | Yield strength clause (6.3) |        | Breaking strength clause (6.2) |        | Young's Modulus of Elasticity | % Elongation | Remarks / Coil No. |
|---------------------------------|------------------|----------------|-----------------|-----------------------------|--------|--------------------------------|--------|-------------------------------|--------------|--------------------|
|                                 | (mm)             | (kg/km)        | (kg/km)         | (kg)                        | (kN)   | (kg)                           | (kN)   | E, GPa                        |              |                    |
| 1                               | 15.24 (0.6")     | 1100.0         | 1177            | 24400                       | 239.36 | 27700                          | 271.74 | 199                           | >3.50        | xx                 |
| -                               | -                | -              | -               | -                           | -      | -                              | -      | -                             | -            |                    |
| -                               | -                | -              | -               | -                           | -      | -                              | -      | -                             | -            |                    |
| -                               | -                | -              | -               | -                           | -      | -                              | -      | -                             | -            |                    |
| -                               | -                | -              | -               | -                           | -      | -                              | -      | -                             | -            |                    |
| -                               | -                | -              | -               | -                           | -      | -                              | -      | -                             | -            |                    |
| <b>Only one sample for Test</b> |                  |                |                 |                             |        |                                |        |                               |              |                    |

Note:

1. Modulus of Elasticity is based on nominal steel area of the steel strand vide clause 13.3 of ASTM – A416a
2. Load versus percentage strain graphs are attached

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
**Test Floor Laboratory**  
**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,

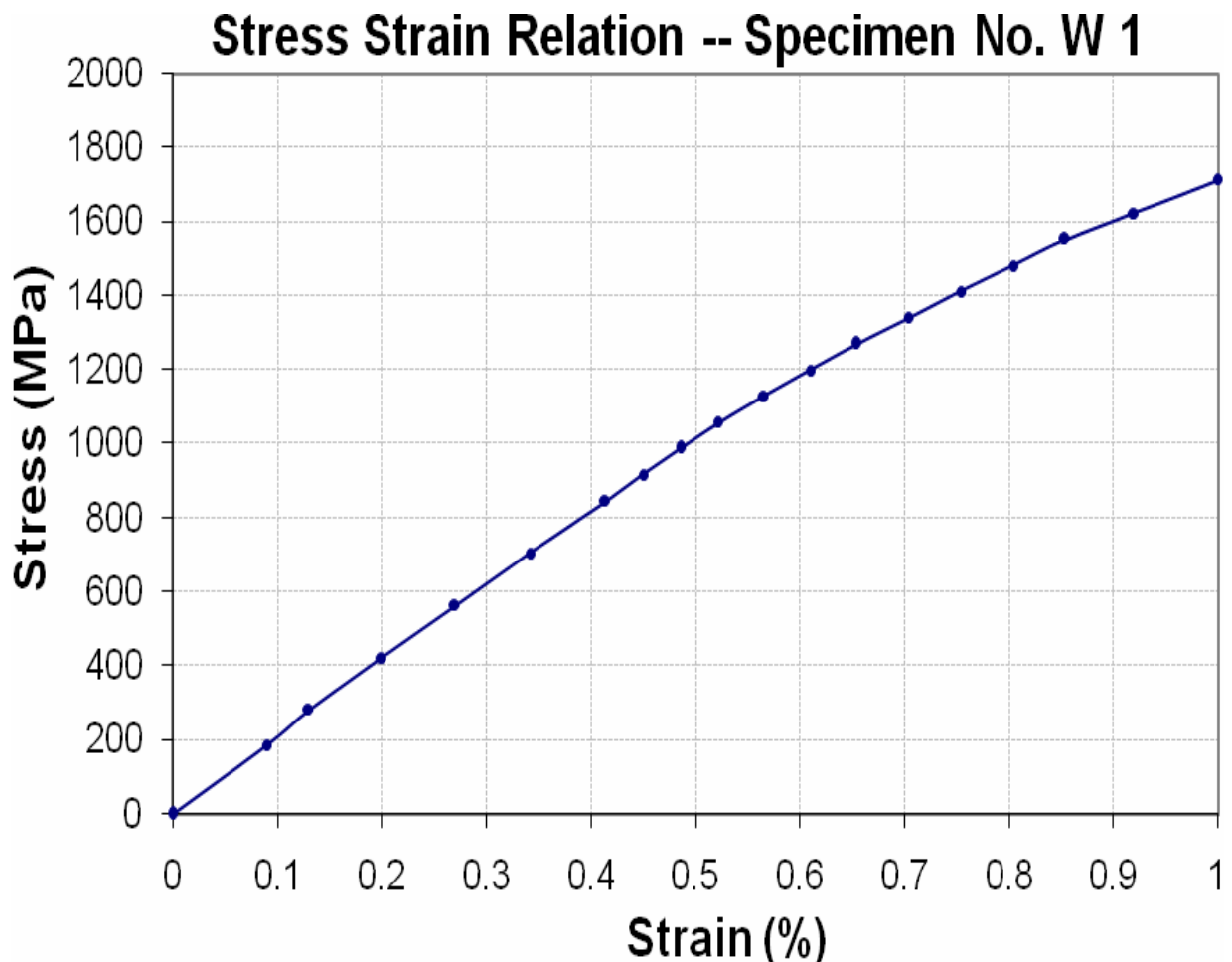
Executive Project Manager  
China Civil Engineering Construction Corporation  
Pakistan Branch Office  
Dasu KKH-01  
(Wire and Cable Products.)

Reference # CED/TFL **5771** (Dr. M Kashif)

Dated: 03-10-2024

Reference of the request letter # CCECC/PAK/DASUFIELD/KKH-01/24-187 Dated: 28-09-2024

**Graph** (Page – 2/2)



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

To,

M/S Heaven's Way Zipline Adventure (Pvt) Ltd.  
Islamabad  
Development of Capital Smart City  
(Adventure Arena)

Reference # CED/TFL **5774** (Dr. Safer Abbass)  
Reference of the request letter # 3/10/2024/153

Dated: 04-10-2024  
Dated: 03-10-2024

**Tension Test Report** (Page – 1/1)

Date of Test 04-10-2024y  
Description Galvanized Steel Core Wire (Rope) Tensile Test

| Sr. No.                         | Nominal Diameter | Measured weight | Breaking Load |        | Remarks / Coil No. |
|---------------------------------|------------------|-----------------|---------------|--------|--------------------|
|                                 | (mm)             | (kg/m)          | (kg)          | (kN)   |                    |
| 1                               | 16               | 0.99            | 15100         | 148.13 |                    |
| -                               | -                | -               | -             |        |                    |
| -                               | -                | -               | -             |        |                    |
| -                               | -                | -               | -             |        |                    |
| -                               | -                | -               | -             |        |                    |
| <b>Only one sample for Test</b> |                  |                 |               |        |                    |
|                                 |                  |                 |               |        |                    |

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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